Are Current Risk Management Strategies within the Commercial Shipping Industry Adequate?

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ABSTRACT

Commercial shipping is a high-risk industry and as such should be actively engaged in the management of risk in order to reduce the number of incidents which both threaten the safety of seafarers and the protection of the environment. The high number of incidents within the commercial shipping industry raises the question of the adequacy of current risk management strategies within the industry. This paper discusses these strategies and relates them to current risk management practices in order to propose possibilities for their improvement.

1 INTRODUCTION

The commercial shipping industry has traditionally been very conservative. Shipboard cynicism towards the implementation of the International Maritime Organisation's International Safety Management Code [1], and the few companies who have attempted to gain the ISO 9002 [2] Quality Systems accreditation, are evidence of a reluctance to embrace new risk management techniques within the industry.

Within both the International Safety Management Code and the ISO 9002 standard, elements point towards the introduction of some form of risk management. This paper will discuss these elements and how they are being implemented within the commercial shipping industry. The discussion will look at whether these elements are efficacious within what is regarded as a high-risk industry and what can be done to improve risk management within the commercial shipping industry.

2 RISK MANAGEMENT WITHIN THE INTERNATIONAL SAFETY MANAGEMENT CODE

One of the primary objectives of the International Safety Management (ISM) Code is to establish safeguards against all identified risks (ISM Code, section 1.2.2.2). This is achieved in a number of ways, all of which constitute a form of risk management. The Code is written for ship operators, not designers or builders of ships and as such, it relates to procedural safety.

Sections 3, 4 and 5 of the ISM Code deal with the responsibilities and authority of both the ship and shore based personnel of the shipping company. Responsibilities are

laid down to ensure compliance with the safety management system. Risk management is undertaken by the establishment of procedures to cover all aspects of shipboard operations that may be perceived to be a risk to the safety of the ship and the prevention of pollution (ISM Code, section 7). Although there are guidelines issued by such organisations as the International Shipping Federation and the International Chamber of Shipping as to what these risks may be, ultimately it is the shipping companies that identify the risks and analyse them in order to produce operational procedures. It is the shipping companies' shore-based management's perception of risks that underlies the safety management of the vessels. There should be input into these procedures from the personnel onboard the vessels, but this is not always the case.

The procedures form the risk action plans to mitigate against potential risk impact. The ISM Code calls for contingency plans to be in place that can be implemented after a risk impact has occurred (ISM Code, section 8). The Code calls for 'emergency preparedness' so that there is the ability to respond to potential emergency shipboard situations. In case of a risk impact actually or nearly occurring, procedures are called for to report, investigate and analyse these impacts with the objective of improving safety and pollution prevention in the future (ISM Code, section 9). The reporting of 'hazardous occurrences' or 'near misses' that had the potential to lead to a risk impact is seen by the International Maritime Organisation as being one of the main ways of improving the knowledge of failure modes within a ship system.

The ISM Code calls for companies to undertake some form of risk analysis in order "to identify equipment and technical systems the sudden failure of which may result in hazardous situations" (ISM Code, section 10). The identification of critical equipment and systems is undertaken by the shipping companies and verified by periodic audits carried out by the vessels flag state administration or their nominated representatives.

3 RISK MANAGEMENT WITHIN ISO 9002

The ISO 9002 : 1994 Model for quality assurance in production, installation and servicing, is the international quality system standard that is suitable for implementation by commercial shipping companies. This standard calls for the establishment and maintenance of "procedures for implementing corrective and preventative action" (ISO 9002 section 4.14.1). The standard also states that "any corrective or preventative action taken to eliminate the causes of actual or potential non-conformities shall be to a degree appropriate to the magnitude of problems and commensurate with the risks encountered" (ISO 9002 section 4.14.1). This is a very broad statement leaving the determination of the required 'degree' of action to the company concerned. The statement implies the need for the implementation of some form of risk management.

The standard calls for procedures to be put in place for preventative action (ISO 9002 section 4.14.3). The procedures are to cover the detection, analysis and reduction of risk. Sources of information from which risks could be identified are listed as processes and work operations, audit results, quality records, service reports and customer complaints. Controls are called for to ensure that any preventative action taken is effective in reducing risk. This implies the use of some form of risk tracking technique.

4 THE APPLICATION OF RISK MANAGEMENT ON SHIPS

From the previous two sections, it can be seen that both the ISM Code and the ISO 9002 standard have elements of risk management within them. From 1 July 1998 all of the worlds oil tankers, chemical tankers, gas carriers, bulk carriers, passenger ships and high speed craft of 500 gross tonnes or above have to comply with the ISM Code. All other vessels of 500 gross tonnes or above, including mobile drilling rigs, have to comply by 1 July 2002. No shipping company has to comply with ISO 9002 and only a small percentage has obtained this accreditation.

Although the introduction of the ISM Code is an improvement on the previously unregulated situation, the monitoring of its successful application has many problems to face. Shipping companies will have to undergo periodic audits to verify their compliance with the Code. The degree to which these audits will be successful at maintaining a high level of compliance with the Code remains to be seen. The main concern is that audits carried out within a commercial environment will inevitably balance safety and commercial viability.

Through the authors' work with personnel of many different shipping companies the following anecdotal points can be made in relation to risk management strategies within the commercial shipping industry:

- there are very few shipping companies who undertake any form of formal risk management

- the reporting of hazardous occurrences and near misses is not carried out to the extent that it should be if the number of risk impacts are to be reduced

- risk identification and analysis techniques are not part of ship personnel’s standard training

- for risks that need additional resources for their mitigation the commercial shipping industry in general suffers from poor communications between the personnel who identify risks, the ships staff, and the personnel who are responsible for allocating additional resources, the shore based management

- commercial shipping tends to operate under a reactive management philosophy rather than being proactive.

There are a number of reasons why the reporting of hazardous occurrences and near misses is not being undertaken to the extent necessary in order to identify new risks. Many people feel that by reporting such an occurrence it will in some way reflect badly upon their professionalism, especially if human error was a factor within the occurrence. There is also the feeling that the shipping company may take these reports and use them as evidence for dismissal. A blame culture is still operated by a majority of shipping companies in that if there is a risk impact somebody must be held accountable. This culture not only restricts the reporting of hazardous occurrences or near misses but can also lead to the restriction of the reporting of actual risk impacts.

The financial control of vessels is ultimately the responsibility of the shore-based management of shipping companies. In general, it is therefore the shore-based management's perceptions of the risks to their vessels that decide if any risk control actions will be undertaken. It is this monistic authoritative interpretation of information that can lead to the possibility of risks remaining unidentified.

Without formal risk management strategies in place and without staff who have some training in how to analyse ship systems in order to identify risks, many risks will remain unidentified. If the possibility of system failure exists then it will only be a matter of time before it becomes a reality.

The propensity of shipping companies to operate with reactive management leaves them open to the consequences of risk impact. Wharton (1992) [3] defines a risk as any unintended or unexpected outcome of a decision or course of action. Without the proactive planning of operations, many unintended or unexpected outcomes can be expected. Wharton also points out the possibility of missed or misconstrued perceptions of the consequences of decisions and states that these may be the greatest source of risk in decision making. A monistic approach to risk management is certainly one way of ensuring the undesirable impact of misconception.

5 IMPROVING RISK MANAGEMENT ON SHIPS

One way of improving risk management on ships is to increase the number of shipping companies who implement formal risk management strategies. In order to do this it is necessary to devise ways to promote risk management to the industry. The best way to do this is possibly through the argument of financial benefit to the company. The following examples illustrate two recent initiatives that promote this argument.

The U.S. Coastguard takes one approach by their Prevention Through People (PTP) initiative (U.S. Coastguard, 1995) [4]. This initiative calls for the production of Risk Analysis Scenario Forms to cover both historic and predictive risk impacts. The forms ask for an analysis of the apparent, propagating and originating causes of an incident. Against each of these causes, a preventative corrective action is placed. A focus group of stakeholders is then called upon to rate the Risk Control Potential of these actions against criteria of efficacy, feasibility and efficiency.

It is the focus on the efficiency of the preventative action that is important in order to be able to 'sell' the idea of formal risk management to a shipping company. The PTP initiative defines the efficiency of a preventative action in terms of the potential dollar loss if no action is taken versus the cost of the proposed action. Proposed preventative actions that are highly cost effective have a powerful argument for their implementation.

Another approach is illustrated by the collaboration between Warsash Maritime Centre and Independent Insurance Company Limited to offer an added value service to marine insurance policies. These policies include both shipping company hull and machinery insurance and ports marine liability and public liability insurance. The elements of the added value service are:

- an impartial risk assessment by an agency external to the company.

- as a result of this risk assessment a report is provided to the company outlining a structured programme of any appropriate risk improvements and recommendations.

Such a system results in the following financial benefits to the company:

- premium levels that reflect levels of risk and risk improvement.

- access to long term policies.

In order to ensure that more potential risks are perceived, shipping companies must move away from their monistic authoritative risk analysis and assessment. Both of the previous examples are methods a company can employ in order to move towards a more pluralistic approach to risk management.

Norris (1985) [5] discusses an approach to risk analysis called deconstruction. This approach emphasises the multiplicity of interpretations that can be placed upon the information data set received from the system under analysis. By adopting a pluralistic approach instead of the monistic approach, many reasonable interpretations of the information will result. There is therefore a much better chance that all risks that could cause a system failure will be identified. To use this approach may require a cultural change in the organisation, sharing the risk analysis and assessment between all of the stakeholders of the system. The authority of an interpretation should come from its perceived merit amongst all of the stakeholders, not from the company's shore based management.

If the level of reporting of hazardous occurrences and near misses is to be improved to a level that will assist in the identification of risks then a cultural change will have to be undertaken within many shipping companies. This change would be a move away from the traditional blame culture to a no blame culture where the reporting of hazardous occurrences and near misses is encouraged with no fear of repercussions to the personnel involved. An organisational culture change is a difficult task to undertake but the benefits are clear to see by looking at the improvements in accident frequency rates of major corporations such as DuPont who have adopted this risk management strategy.

DuPont's risk management strategy has four main elements (MacCormack, 1997) [6]:

- a commitment to zero injuries and incidents.

- having a culture of interdependence for safety management, where employees work as a team to achieve safety goals instead of relying on management alone for safety responsibility.

- giving appropriate training to teach, motivate and sustain the safety management knowledge of employees.

- intimately integrating safety with business objectives, shifting the responsibility and accountability for safety from the functional level, to the point where the entire business owns the safety goal.

DuPont (1999) [7] have found that, "attaining this new culture of interdependence requires the involvement of everyone in the safety process, in addition to a new focus on the behaviours exhibited by team members and an open environment that promotes free communication". However, although not easy to achieve, this type of safety culture does have proven benefits. During 1998, 137 DuPont manufacturing sites registered zero lost workday cases (LWCs) for the entire 12-month period, whilst the company also achieved record earnings.

Other benefits can be obtained from the implementation of risk management strategies apart from the elimination of risks. Chapman et al. (1983) [8] suggest that in undertaking risk management, opportunities are often recognised, as well as threats. This could be a useful way of selling the virtues of risk management to sceptical shipping companies. Chapman et al. also suggest that the process of risk management helps to develop teamwork as everyone comes to appreciate the problems of different departments within the organisation.

6 CONCLUSION

The number of incidents resulting in loss of life, property and environmental pollution within the commercial shipping industry confirm it as being a high-risk industry. With the introduction of a regulatory safety management code, the International Safety Management Code, the industries regulatory bodies are trying to reduce the frequency and consequences of these incidents. The ISM Code can therefore be interpreted as a risk management strategy. The industry's lack of experience with risk management means that there will be some difficult times ahead whilst it adapts its organisational culture to the needs of the strategy. The spirit and intent of the ISM Code are in the very best interests of the shipping company, the seafarer and the environment, but 'selling' the benefits of risk management will not be easy. It is up to the industry's regulatory bodies and training establishments to convince both the seafarers and the shipping companies' management of the benefits of risk management if it is ever going to be successful at significantly reducing the number of marine incidents. Other high-risk industries have gone through this exercise and there is a great deal the commercial shipping industry can learn from the nuclear power and chemical industries in this respect.

The commercial shipping industry does now have a regulated risk management strategy in the International Safety Management Code. The adequacy of this strategy will depend upon the shipping industry's willingness to adopt the spirit and intent of the ISM Code and the industry regulatory authorities willingness to enforce this adoption.

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